Synopsis of the Preferred Embodiment

Since Examiner Harrington is newly assigned to this application, Applicants have provided a brief synopsis for her convenience.

Referring to Fig. 2-4, a CCD image sensor 2 including a plurality of adjacent horizontal scanning rows of individual pixels 3 and a plurality of vertically adjacent color filters 4B, 4G and 4R is driven by a controller 10 through a CCD driver 6 on the basis of vertical synchronizing signals generated at a frequency of 1/60 seconds (see Fig. 3). In the movie mode, the CCD image sensor 2 is read according to pixel combination.

Specifically, and as discussed in the interview, the signal charges of each pixel 3 of the even horizontal scanning lines of the CCD are added to a signal charge of one of two adjacent individual pixels 3 disposed in the same color filter column, thereby providing image signals for a first or odd field. To obtain field image signals of an even field, the signal charge of each pixel of an even horizontal scanning line is added to a signal charge stored in one of those pixels detecting the same color in the other of the two adjacent odd horizontal scanning lines.

Another aspect of the present application is the increasing of the charge storage time when switching between the movie mode and recording mode, a second charge storage time is determined by applying a doubling factor to the

first charge storage time. This allows the luminance and color balance of the recorded still picture to be set in the same range as the moving picture displayed on the view finder. The same effect will result from applying a doubling factor (doubling) to a first set gain of an amplifier 8 in the recording mode.

Claim Rejections

Claims 1-6 stand rejected under 35 U.S.C. § 103 as being unpatentable over newly applied Iura et al. (U.S. Patent No. 5,847,756) in view of Sasaki and further in view of Sugihara (U.S. Patent No. 4,054,915, also newly applied). Further, the Examiner has rejected independent claims 7 and 9 under 35 U.S.C. § 103(a) as being unpatentable over Iura et al. alone. These rejections are respectfully traversed.

Iura et al.

Iura et al. is directed to an image pickup apparatus capable of generating both a motion picture and a still picture. In Iura et al., exposure control is performed by pre-shortening the exposure time for an image sensor device by making use of an electronic shutter function within a motion picture imaging mode, while maintaining a diaphragm between a lens and the sensor at a

position closer to the opened state.

In one embodiment, electric charges (i.e., signals) are outputted from individual pixels of the image sensor device, independent from one another in the still picture mode. In the motion picture mode, electric charges from every pair of pixels located adjacent to each other in the vertical direction are mixedly read out on a field-by-field basis (i.e., a two-line mixed read out scheme is utilized in the movie mode, whereas a one-line read out method is utilized in the still picture mode). In a desirable aspect, a greater amount of electric charge can be stored in the image sensor device 103 in the still picture imaging mode, as compared to the motion picture imaging mode (up to 3x), so that the S/N ratio can correspondingly be improved.

Regarding the still picture pickup mode, Fig. 17 illustrates a timing chart for exposure control. As can be seen in Fig. 17, the exposure control of the motion picture imaging operation (fields 41 and 42) is affected by increasing or decreasing a period TS via the electronic shutter speed control signal 211, while the iris diaphragm 202 is being opened, so that the exposure time in the still picture pickup operation (i.e., during field 43) can be shortened. Further, it appears that in each of the embodiments in Iura et al., a desirable result is when the amount of exposure in the motion picture imaging mode becomes equal to the amount of exposure in the still picture pickup mode. Again, this is

done by manipulating an iris control signal 210 and the electronic shutter speed control signal 211 while in the still mode.

Distinctions From Iura et al.

1. Claims 7 and 9.

Initially, Applicants respectfully submit that the Examiner may be misconstruing Iura et al. and its applicability to the present invention. Particularly, Applicants do not see the correlation between Iura et al. with regard to the claimed limitations of employing a multiplying factor (claimed as a doubling factor) for increasing the charge storage time in a still mode as compared to a movie mode, as claimed in claims 7 and 9. It appears that what is desired in Iura is to shorten the exposure time in the still mode (i.e., after shutter release) such that the amount of exposure in the still mode equals the movie mode. Moreover, Iura et al. says nothing about utilizing any kind of multiplication (doubling) factor for a charge storage time, depending on whether the camera is in the movie mode or still mode.

Particularly the cited columns in Iura et al. do not describe manipulating charge storage time, but rather the amount of exposure. For example, with regard to Fig. 10 and the specification at column 14, lines 8-20 in Iura et al., the Examiner cites a passage which indicates that the amount of exposure in the still picture pickup mode, as represented by the area B shown in Fig. 10, is

1.5 times as large as that of the exposure in the motion picture imaging mode (area A shown in Fig. 10).

In other words, the amount of exposure during the time period from time T_3 to T_4 is insured to be 1.5 times as large as that of the exposure in the previous mode. More importantly, this passage, as well as each of the other passages cited by the Examiner, is reflective only of increasing these charge storage amounts in the still mode, and not of utilizing a multiplication factor (doubling factor as claimed) to modify charge storage times during the movie mode and recording mode, as claimed in claim 7, and as somewhat similarly claimed regarding gain in claim 9. In any respect, Applicants assert that increasing the charge storage amount is not and cannot in any regard be analogous to doubling charge storage time in a recording mode by use of a multiplication (doubling) factor.

Accordingly, Applicants respectfully request the Examiner to explicitly point out where the utilization of a doubling factor is taught or suggested by Iura et al. Absent this, Applicants submit that the rejection is improper and request withdrawal of the rejection as pertaining to claims 7 and 9.

2. Claims 1-6.

Regarding claims 1 and 5, Applicants note that the Examiner has apparently ignored the claim amendments to the preambles in each of these

claims. The preamble is not given the effect of a limitation unless it breathes life and meaning into the claim. In order to limit the claim, the preamble must be "essential to point out the invention defined by the claim." Kropa v. Robie, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In claims directed to articles and apparatus, any phraseology in the preamble that limits the structure of that article or apparatus must be given weight. In re Stencel, 828 F.2d 751, 4 U.S.P.Q. 2d 1071 (Fed. Cir. 1987). Although Applicants claims are in method form, Applicants submit that case law is agreeable to Applicants position--that the preambles should be considered.

Accordingly, and in view of the above, Applicants submit that the preambles for each of independent claims 1 and 5 appear to breathe life and meaning into the claim, and at least limit the structure of the electronic still camera. Particularly, the solid-state imaging device in Iura et al. fail to include a plurality of adjacent horizontal scanning lines of individual pixels intersected by three vertically-adjacent color separation filters forming columns in the solid-state imaging device, so that individual pixels of a plurality of adjacent horizontal scanning lines within a particular color filter detect a same color, as claimed in the preamble of claims 1 and 5.

Further, Applicants submit that, even assuming arguendo that Sasaki and Sugihara could be combined with Iura et al., which Applicants submit they

could not, neither of these patents appear to disclose the claimed solid-state imaging device. Therefore, Applicants submit that the preamble in claims 1 and 5 are indeed limiting, and request the Examiner to distinctly point out the corresponding claimed structure of the solid-state device in the electronic still cameras of Iura et al., Sasaki and/or Sugihara. If these references fail to have the structure to begin with, the rejection is improper.

Additionally, the "obtaining" steps of both claims 1 and 5 require that each of the pixels in the even and odd adjacent odd scanning lines must be vertically aligned within the same color separation filter. In the Examiner's rejection, the Examiner digresses at length to inform Applicants that additive interlacing is well known in the art. However, the requirement in claims 1 and 5 is that each of the pixels in the even and adjacent odd scanning lines are vertically aligned within the same color separation filter; this is a limitation which is not taught or suggested by any of Iura et al., Sasaki or Sugihara. Therefore, in view of the above, withdrawal of the rejections of claims 1-6 is earnestly solicited by Applicants.

Conclusion

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of the

claims 1-7 and 9 in connection with the present application is earnestly solicited. Should there be any outstanding matters which need to be resolved in the present application, the Examiner is respectfully requested to contact Matthew J. Lattig, Registration No. 45,274 at the telephone number of the undersigned below to conduct an interview.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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